

COURSES IN NERVE REFLEXOLOGY

STUDY MATERIALS

for refreshing Level 1

OVERVIEW OF NERVES AND THEIR TARGET TISSUES

Study advice for participants on the courses of nerve reflexology.

Handling nerve reflex points in a reflexology treatment can only be successfully performed by pressing the points on the right place, on the right time and as part of good treatment planning.

For every nerve reflex point the reflexologist should remind:

“Which nerve represents this point, what is the target tissue of this nerve and is this target tissue involved in the patient's pain?”

Knowledge of the nerves and their innervation fields is therefore a primary matter in the study for nerve reflexology.

This study handout gives an overview of the nerves and their innervation field in a comprehensive and generalized way.

It is strongly recommended to study this material in depth before taking part at the course you subscribed for. It will help you a lot during practice.

With kind regards

Nico Pauly

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What do I need to know about peripheral nerves?

1. Peripheral nerves are originating from the spinal nerve roots. They run into all body parts:

- all structures of the musculo-skeletal system or movement system,
- all structures of the visceral system, meaning all organs inside our body.

2. Each peripheral nerve contains many nerve fibres or neurons. A neuron is a nerve fibre with a cell and a tail or axon.

The different types of neurons are:

- Somatic motor neurons: they are driving on skeletal muscles.

The cells of these neurones are lying in the ventral horn of the spinal cord and the axons (tails) are running in the peripheral nerves to their target muscles.

- Sensory neurons: they are picking up information about the mechanical, chemical and temperature conditions of all tissues.

The cells of these neurones are lying in the spinal ganglion. The axons (tails) are ending in all different kinds of tissue. They bring the information back to the cell in the spinal ganglion. From there the signal runs in to the dorsal horn of the spinal cord.

- Sympathetic motor neurons: they drive on the special muscles in blood- and lymph vessels and in organs.

The cells of these neurones are lying in the lateral horn of the spinal cord or T.I.L. (tractus intermedio lateralis) between C8-L2.

The axons go in to the paravertebral ganglia or sympathetic chain ganglia left and right of the spinal cord.

Somewhere in this chain they are connecting to other sympathetic nerve cells. The axons of these cells are running with the peripheral nerve to parts of the body to innervate the blood- and lymph vessels and organs.

- Parasympathetic motor neurones: motor neurons for driving on organ-muscles.

The cells of these neurons are lying either in the spinal cord S2-S4 or in the brainstem.

3. Remember this:

- In the musculo-skeletal (movement) system we have:

i. muscles to move, they need:

1. somatic motor neurons to move them and,
2. sensory neurons to measure mechanical and chemical environment,
3. sympathetic motor neurons to drive on blood and-lymphflow,

ii. ligaments, tendons, joint structures, they need

1. sensory neurons to measure tension and chemical condition
2. sympathetic motor neurons to drive on blood- and lymphflow

- In the skin we need:

- i. Sensory neurons to measure chemical and chemical condition,
- ii. Sympathetic motor neurons to drive on blood- and lymphflow, sweatglands and hairroots.

- In the organs we need:

- i. Sympathetic and parasympathetic motor neurons to drive on the muscles around the organs and glands.
- ii. Sympathetic motor neurons for blood- and lymphflow

4. Everytime you push on a nerve reflex points you have an influence on all the functions that are served by the many neurons in that nerve. So you might expect:
 - changes in contraction of skeletal muscles if the nerve contains somatic motor neurons,
 - changes in sensibility if the nerve contains sensory neurons,
 - changes in blood- and lymphflow if the nerve contains sympathetic neurons,
 - changes in contractility of organs if the nerve contains sympathetic and/or parasympathetic neurons.

5. Every peripheral nerve originates in certain levels (segments) of the spinal cord (= spinal nerves) or in the brainstem (= cranial nerves):
 - the spinal nerves will split immediately in a dorsal and ventral root.
 - the dorsal root is small and serves only the dorsal part of the spine
 - the ventral root is larger and serves innervation for the spine but also generates long peripheral nerves in arms and legs
 - brainstem peripheral nerves don't split in a dorsal and ventral root.

Nerve	Level	Motor neurones	Sensory neurones	Sympathetic neurones	Parasympathetic neurones
N. Subcostalis <i>Subcostal nerve</i>	T12	Oblique and transverse abdominals	<ol style="list-style-type: none"> 1. In these muscles 2. In the abdominal skin under the navel 3. In the peritoneum 	Yes	No
N. Iliohypogastricus <i>Iliohypogastrical nerve</i>	L1	Oblique and transverse abdominals	<ol style="list-style-type: none"> 1. In these muscles 2. In the groin 3. In the skin over the lateral side of the hip 4. In the peritoneum 	Yes	No
N. Ilioinguinalis <i>Ilioinguinal nerve</i>	L1	Oblique and transverse abdominals	<ol style="list-style-type: none"> 1. In these muscles 2. In the groin 3. In scrotum or major vagina lips 4. In the peritoneum 	Yes	No
N. Genitofemoralis <i>Genitofemoral nerve</i>	L2	No	<ol style="list-style-type: none"> 1. Skin of scrotum or labium 2. Upper medial part of the upper leg 	Yes	No
N. Cutaneus femoris lateralis <i>Lateral cutaneal femoral nerve</i>	L2	No	In the skin and fascia of the lateral side of the upper leg	Yes	No
N. Femoralis <i>Femoral nerve</i>	L2-L4	Quadriceps and iliopsoas	<ol style="list-style-type: none"> 1. In these muscles 2. In the skin of the ventral part of the upper leg 3. In the joints of hip and knee 4. Skin of medial side of lower leg (provided by the saphenus nerve) 	Yes	No
N. Obturatorius <i>Obturator nerve</i>	L3-L4	Adductors of upper legs and external rotators of the hip	<ol style="list-style-type: none"> 1. In these muscles 2. In the skin of the medial side of upper leg 3. In the joints of hip and knee 	Yes	No

Nerve	Level	Motor neurones	Sensory neurones	Sympathetic neurones	Parasympathetic neurones
N. Gluteus superior <i>Superior gluteal nerve</i>	L4-S1	Gluteus medial and minimus muscle Tensor fascia lata muscle	No	Yes	No
N. Gluteus inferior <i>Inferior gluteal nerve</i>	L4-S2	Gluteus maximus muscle	No	Yes	No
N. Ischiadicus and N. Tibialis and N. Peroneus <i>Sciatic nerve and his prolongations in Tibial and Peroneal nerve</i>	L4-S2	1. Hip-rotator muscles 2. Hamstrings muscles 3. Calf and plantar foot muscles (Tibial nerve) 4. Peroneal muscles, foot and toes extensor muscles	1. Hip and knee joint (sciatic nerve) 2. Dorsal side of the upper leg (sciatic nerve) 3. Dorsal side of lower leg and plantar side of the foot (Tibial nerve) 4. Lateral side of lower leg and dorsum of the foot	Yes	No
N. Phrenicus <i>Phrenic nerve</i>	C3-C5	Diaphragm	Diaphragm All intern fascia of upper abdominal organs, lung, pericard, peritoneum	Yes	No
Pudendal plexus	S2-S5	Pelvic floor muscles Pelvic organs	Pelvic floor muscles Pelvic organs	No	Yes

What do I need to know about the sympathetic nervous system?

1. It is a “do” system, meaning it contains motor neurons.
2. These motor neurons are driving on “smooth” muscles meaning: muscles around organs.
3. By these organs we understand:
 - a. The digestive organs,
 - b. The glands: sweat glands, hormonal glands and others...
 - c. The muscles in the blood vessels and lymph vessels.
 - d. The hair roots muscles.
4. It is present as well in the musculoskeletal as in the visceral part of the body.
5. It activates all tissues and hormones needed for action: physical, emotional and intellectual.
6. The first action neurons lie in a row in the lateral horn of the spinal cord between C8 and L2. This is the “TRACTUS INTERMEDIOLATERALIS” or in a shortcut: TIL.
7. The second action neurons lie in the paravertebral ganglia, also known as the sympathetic chain ganglia. These ganglia lie in a chain lateral of the spine starting at the level of C1 and going down to sacral 5.
8. Third action neurons, especially for the organs under the diaphragm, lie in the “prevertebral ganglia”. These ganglia are mounted on the abdominal artery.
 - The first prevertebral ganglia lie at the level of T10: coeliaca ganglia
 - The second at the level of L1: mesentericum superior.
 - The third at level L3: mesentericum inferior.
9. The axons of the neurons, coming out of the prevertebral ganglia are running:
 - a. or to the organs via the big arteries to these organs,
 - b. or around the abdominal artery.
10. The axons around the abdominal artery between celiac and mesentericum superior is called the solar plexus.
11. The axons around the abdominal artery between mesentericum superior and inferior is called: intermesenterical plexus.
12. Axons out of TIL T5-T9 are running to the coeliac ganglia and are serving mostly the upper abdominal organs.
13. Axons out of TIL T10-T12 are running also to the celiac ganglia and they are especially made for innervating the adrenals.
14. Axons out of TIL L1-L2 are running to the mesentericum superior mostly for the innervation of the bowel.
15. Axons out of TIL L3-L5 are running to the mesentericum inferior mostly for the pelvic organs.